

### **REMARKS**

This responds to the Office Action mailed on May 3, 2006.

Claims 1-14 and 30-43 are pending in this application.

No rejections or objections were asserted with respect to claims 32-34. Applicant respectfully requests a Notice of Allowability for these claims.

#### **§112 Rejection of the Claims**

Claims 3 and 4 were rejected under 35 USC § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which Applicant regards as the invention. Applicant respectfully traverses the rejection and requests the Office to consider the following.

Claim 1 refers to a “first bump” not a “first solder”, i.e., a “solder first bump”. Claims 3 and 4 refer to this solder first bump. Withdrawal of the rejections is respectfully requested.

#### **§102 Rejection of the Claims**

Claims 1-3, 5-10, 30 and 31 were rejected under 35 USC § 102(b) as being anticipated by Imamura et al. (U.S. 2002/0185309). The Applicant respectfully traverses the rejection and requests the Office to consider the following.

"A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference." (*Verdegaal Bros. v. Union Oil Co. of California*, 814 F.2d 628, 631, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987), M.P.E.P. §2131, 8<sup>th</sup> Ed., Rev. 4).

Claim 1 requires the “while mating forming a stress-compensation collar (SCC) on the board, wherein the SCC abuts the solder first bump.” The Office Action cites to Imamura, but Imamura teaches at paragraph [0095] that

[s]ubsequently, the washing process is conducted for unremoved flux and unremoved metal grains as shown in FIG. 6D, and the forming process is conducted to form the under fill resin 118 as shown in FIG. 6E.

This is necessary because unremoved metal grains would present an electrical shorting danger. Consequently, Imamura does not form or appreciate the formation of a stress compensation collar while mating a die to a board as required in claim 1. Imamura uses the under fill resin 118, which does not have a collar structure. Because Imamura does not anticipate claim 1, withdrawal of the rejection is respectfully requested.

Claims 1 and 4 were rejected under 35 USC § 102(e) as being anticipated by Wang et al. (U.S. 2003/0096453). The Applicant respectfully traverses the rejection and requests the Office to consider the following.

The Office Action cites to Wang's "flux (114)", but Applicant can find no reference numeral 114 in Wang. Wang, however, teaches cleaning away any flux residue in FIG. 1. Further, Wang teaches that any flux is fully chemically incorporated into the underfill material such that any collar structure is destroyed.

[0027] Illustrated in FIG. 4 is representative of the processes for assembling a chip in accordance with the present invention. The process begins with the application of tacky epoxy flux (403) .... The tacky flux is formulated with compositions compatible with or similar to underfill composition and therefore *will be incorporated into the adhesive network structure after reflow heating cycle*. In this context the word compatible means that the tacky fluxes are composed of chemicals which are reactive to the epoxy or other compositions in underfill material. During reflow heating, the *tacky flux is solublized in the underfill material and become a part of the net work structure* after curing.

(Wang at paragraph [0027]. Emphases added). Consequently, Wang does not form- nor appreciate the formation of a stress compensation collar while mating a die to a board as required in claim 1. Wang uses the cured underfill resin 209, which does not have a collar structure. Because Wang does not anticipate claim 1, withdrawal of the rejection is respectfully requested.

### §103 Rejection of the Claims

Claims 11-14 were rejected under 35 USC § 103(a) as being unpatentable over Wang et al. in view of Capote et al. (U.S. 2003/0218261). Applicant respectfully traverses the rejection and requests the Office to consider the following.

To establish a prima facie case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations. The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, and not based on applicant's disclosure. *In re Vaack*, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991). (M.P.E.P. § 2143 8<sup>th</sup> Ed, Rev.4).

The Office Action admits that “Wang et al. fails to teach the stress compensation reduction layer on the bottom of the substrate. (Office Action at page 4). Again, Applicant cannot find a “flux (114)” in Wang. Further as set forth above, Wang does not form nor appreciate the formation of a collar structure on the board while mating are required in claim 1 from which claim 11 depends. Capote does nothing to remedy these deficiencies. Because all the claim limitations are not taught in the cited references, withdrawal of the rejections is respectfully requested.

Claims 35 and 36 were also rejected under 35 USC § 103(a) as being unpatentable over Imamura et al. in view of Ludwig et al. (U.S. 2004/0060963). Applicant respectfully traverses the rejection and requests the Office to consider the following.

The Office Action invokes Official Notice to supplement what the cited references are admitted to have missing. The Office Action admits that “Imamura fails to disclose the use of a translational gantry in depositing the flux.” (Office Action at page 5). Applicant respectfully objects to the taking of official notice, and pursuant to M.P.E.P. § 2144.03, Applicant traverses the assertion of official notice and requests that the Office cite a reference that teaches the missing element. If the Office cannot cite a reference that teaches the missing element, applicant respectfully requests that the Office provide an affidavit that describes how the missing element is present in the prior art. If the Office cannot cite a reference or provide an affidavit, Applicant requests withdrawal of the rejections.

In any event, because Imamura does not teach the limitations of claim 30, particularly, because Imamura does not form or appreciate the formation of a stress compensation collar while mating a die to a board as required in claim, all the claim limitations are not taught in the cited references. Withdrawal of the rejections is respectfully requested.

Claims 37-43 were also rejected under 35 USC § 103(a) as being unpatentable over Wang et al. in view of Capote et al., and further in view of Ludwig et al. Applicant respectfully traverses the rejection and requests the Office to consider the following.

The Office Action invokes Official Notice to supplement what the cited references are admitted to have missing. The Office Action admits that “Wang et al. and Capote et al. fail to disclose the use of a translational gantry in depositing the flux.” (Office Action at page 5). Applicant respectfully objects to the taking of official notice, and pursuant to M.P.E.P. § 2144.03, Applicant traverses the assertion of official notice and requests that the Office cite a reference that teaches the missing element. If the Office cannot cite a reference that teaches the missing element, applicant respectfully requests that the Office provide an affidavit that describes how the missing element is present in the prior art. If the Office cannot cite a reference or provide an affidavit, Applicant requests withdrawal of the rejections.

In any event, because Wang does not teach the limitations of claim 30, particularly, because Wang does not form or appreciate the formation of a stress compensation collar while mating a die to a board as required in claim, all the claim limitations are not taught in the cited references. Withdrawal of the rejections is respectfully requested.

Conclusion


Applicant respectfully submits that the claims are in condition for allowance and notification to that effect is earnestly requested. The Examiner is invited to telephone Applicant's attorney ((801) 278-9171) to facilitate prosecution of this application.

If necessary, please charge any additional fees or credit overpayment to Deposit Account No. 19-0743.

Respectfully submitted,

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